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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,127	04/25/2006	Satoshi Seo	0756-7662	8187

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EXAMINER	
PATTON, PAUL E	

ART UNIT	PAPER NUMBER
2822	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,127	SEO ET AL.	
	Examiner	Art Unit	
	PAUL E. PATTON	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/5/2008,& 3/14/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

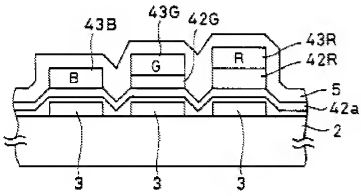
3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, 3, 9, 10, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda (USPAT 6,541,130 B2) in view of Miura et al., US 2006/0033425 A1) hereinafter Miura and further in view of Kido et al., (USPAT 6,589,673 B1) hereinafter Kido, and further in view of Utsugi et al., (USPAT 5,670,792) hereinafter Utsugi, and further in view of Matsumoto et al., (US 2005/0098207 A1)

hereinafter Matsumoto and further in view of Nakada et al., ("Multi Photo Emission Organic EL Device using Charge-Transfer Complex as Charge Generation Layer", 63rd Applied Physics-related Combined Seminar, September, 2002, Nigata University, paper 27a-ZL-12) hereinafter Nakada.

5. As to claims 1, 2, 3, 9, 10 and 12, Fukuda discloses and shows and shows (Fig 3) a light-emitting device have at least first and second light emitting elements exhibiting different emission colors., each of the first and second light-emitting elements comprising: a first electrode and a second electrode; and a first layer, a second layer and a third layer which are formed over the first electrode and a second electrode over the first layer, the second layer and the third layer, wherein the first layer serves as a layer generating holes, the second layer serves as a layer including a light-emitting layer, and the third layer serves as a layer generating electrons, and wherein a thickness of the first layer of the first light-emitting element is different from that of the second light-emitting element and the first and second thickness are different from the third light-emitting element. (Column 5, lines 24-36 & Column 9. line 62-column 11 line 59).

FIG. 3



6. Fukuda does not explicitly disclose that the first electrode has a non-light-transmitting property.

7. Miura is related to a similar light-emitting device and discloses that the first electrode is a non-light-transmitting layer (reflective layer). (Paragraph [0084]).

8. Miura is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to make the first electrode a non-light-transmitting layer.

9. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda by making the first electrode a non-light-transmitting layer for advantages such as more efficient emission of light and since it has been determined that combining prior art elements according to known methods to yield predictable results is obvious.

10. Fukuda as modified by Miura does not explicitly disclose that the first layers comprise an organic compound and a metal oxide.

11. Kido discloses doping the organic layer with a metal oxide. (Column 3, line 66 – column 4, line 67).

12. Kido is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to use a metal oxide mixed with the organic layer.

13. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda and Miura by using a metal oxide mixed with the organic layer for advantages such as operating at a lower driving voltage according to the teachings of Kido. (Column 3, lines 1-5).

14. Fukuda as modified by Miura and Kido does not disclose a plurality of transistors as claimed in claims 9, 10 and 12.

15. Utsugi discloses and shows (Fig 3) the very well known circuit comprising a plurality of transistors provided at interconnection portion formed by signal lines and scanning lines.

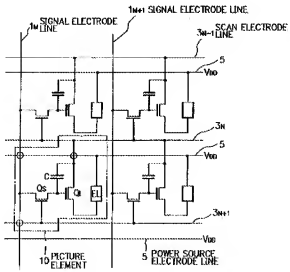


FIG. 3

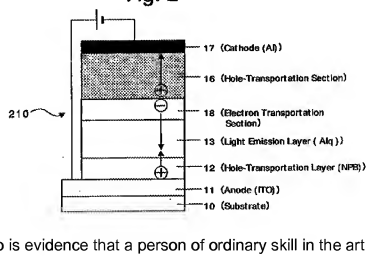
16. Utsugi is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to use a plurality of transistors provided at interconnection portion formed by signal lines and scanning lines.

17. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda and Kido by using a plurality of transistors provided at interconnection portion formed by signal lines and scanning lines for advantages such as improved display stability according to the teachings of Utsugi. (Column 3, line 66 – column 4, line 4).

18. Fukuda as modified by Miura, Kido and Utsugi does not disclose the addition of the fourth layer formed between the first and second electrodes as a layer for generating holes.

19. Matsumoto discloses and shows (Fig 2) an organic light emitting device comprising a fourth layer (16) as a layer for generating holes.

Fig. 2



20. Matsumoto is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to use a fourth layer as a layer for generating holes.

21. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda, Miura, Kido and Utsugi by using a fourth

layer as a layer for generating holes for advantages such as lowered excess drive voltage according to the teachings of Matsumoto. (Paragraphs [0025] & [0026]).

22. As to claims 5 and 14, Fukuda as modified by Miura and Kido discloses a representative list of organic substances concurrent with those claimed. (Kido, Column 8, line 35 – column 10, line 65).

23. Claims 6, 7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda as modified by Miura, Kido and Utsugi in view of Matsumoto.

24. Fukuda as modified by Miura, Kido and Utsugi discloses all the limitations of claims 6, 7, and 13 except for the addition of the fourth layer formed between the first and second electrodes as a layer for generating holes.

25. Matsumoto discloses and shows (Fig 2) an organic light emitting device comprising a fourth layer (16) as a layer for generating holes.

26. Claims 16, 17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda as modified by Miura, Kido and Utsugi and further in view of Urabe et al. (USPAT 6,969,948 B2) hereinafter Urabe.

27. Fukuda as modified by Kido, Miura, Utsugi and Matsumoto discloses all the limitations of claims 16, 17, 19 and 20 except for the addition of a plurality of color filters having different optical characteristics which are formed on the first electrode side or emission side.

28. Urabe is related to a similar organic light emitting display device and discloses and shows (Fig 1) three color light emitting devices (10R, 10G, 10B) with corresponding color filters (22R, 22G, 22B) on the emission side.

29. Urabe is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to use a plurality of color filters having different optical characteristics which are formed on the first electrode side or emission side.

30. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda, Miura, Kido and Utsugi by using a plurality of color filters having different optical characteristics which are formed on the first electrode side or emission side for advantages such as increasing contrast according to the teachings of Urabe. (Column 3, lines 12-19).

31. Claims 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda as modified by Kido, Miura, Utsugi, Matsumoto and Urabe and further in view of Mori et al., (US 2005/0249974 A1) hereinafter Mori

32. Fukuda as modified by Kido, Miura, Utsugi, Matsumoto and Urabe does not disclose that the metal oxide is selected from the group consisting of molybdenum oxide, vanadium oxide and rhenium oxide.

33. Mori discloses that the hole generating layer can comprise one of molybdenum oxide, vanadium oxide and rhenium oxide. (Paragraph [0150]).

34. Mori is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to use a hole generating layer can comprise one of molybdenum oxide, vanadium oxide and rhenium oxide.

35. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda, Miura, Kido and Utsugi by using a hole generating layer can comprise one of molybdenum oxide, vanadium oxide and rhenium

oxide for advantages such as stabilizing charge injection and enhancing light emitting efficiency according to the teachings of Mori.

36. Claims 8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda as modified by Kido, Miura, Utsugi, Matsumoto and Urabe and further in view of Arai (USPAT 6,111,274).

37. Fukuda as modified by Kido, Miura, Utsugi and Urabe does not disclose that the second electrode comprises indium tin oxide (ITO) including silicon oxide.

38. Arai discloses that the electrode comprising ITO also includes silicon oxide. (Column 4, lines 54-59).

39. Arai is evidence that a person of ordinary skill in the art would find a reason, suggestion or motivation to use ITO including silicon oxide.

40. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fukuda, Kido, Matsumoto, Urabe and Utsugi by using ITO including silicon oxide for advantages such as adjusting the work function of the electrode according to the teachings of Arai. (Column 4, lines 55-56).

41. In a final note, as demonstrated above, all the elements recited in the claims are known in the relevant art and as has been held, their combination according to known methods to yield a predictable result, in this case a multi-color organic light-emitting display, is obvious to one of ordinary skill in the art.

Conclusion

42. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL E. PATTON whose telephone number is (571)272-9762. The examiner can normally be reached on 7:00 - 5:30 Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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